HAER No. MO-44

James River Bridge
0.6 mile north of Greene/Christian County
line and 1.5 miles west of State Route 160
Springfield vicinity
Greene County
Missouri

· HAER MO, 39-SPRIF.V, 2-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record Rocky Mountain Regional Office National Park Service U. S. Department of the Interior P. O. Box 25287 Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

James River Bridge

HAER No. MO-44

Location:

0.6 mile north of Greene/Christian County line and

1.5 miles west of State route 160, Springfield

vicinity, Greene County, Missouri

UTM:

A: 15.4106180N.471199E

15.4106210n.471120E

Quad: Nixa

Date of Construction:

1885

Builder/Designer:

Kansas City Bridge and Iron Company

Present Owner:

Greene County

Greene County Courthouse Springfield, Missouri

Present Use:

Vehicular bridge, to be replaced by a new vehicular

bridge. Metal truss is to be retained and made

available for reconstruction.

Significance:

James River Bridge was the first metal bridge

constructed in the county and was associated with the

Harrison-Springfield Road, a major 19th century

commercial route.

Historian:

Kerry C. McGrath

Center for Archaeological Research, Southwest

Missouri State University

August 1988

I. HISTORY

A. Springfield, Greene County, and the Arkansas Trade

The James River Bridge on the former Harrison, Arkansas to Springfield, Missouri road remains as an artifact to 19th century commerce between Greene County and the upper White River country to the south. This commerce had its beginnings in the early 1800s and came to be known as the Arkansas trade.

Between 1812 and 1822, some 8,000 emigrant Indians (Cherokee, Delaware, Shawnee, Illinois and Kickapoo) relocated to the upper White River country of northwestern Arkansas and southwestern Missouri. With the Indians came government-subsidized trade financed by federal annuities. Commercial activity centered in the James River Valley in present Greene and Christian counties. Here were the Delaware and Delaware Town, located in Section 6, Township 27 North, Range 23 West, some seven miles southwest of the James River Bridge. The trade entailed provisioning the Indians and export of commodities, such as furs, hides, and meat, to markets in the Mississippi Valley.

From this commerce, an inter-regional network of roads developed with the White River trace, connecting Delaware Town to the upper White River country. The trace then went north over the Kickapoo prairie and veered eastward across the Ozark Highlands, terminating initially at Ste. Genevieve and later rerouted to St. Louis, also on the Mississippi River. A second road intersected this "great interior highway" on the Kickapoo prairie. Called the Boonville Road, it went north to the Osage River and then east to Boonville on the Missouri River. 5

Initial removal between 1828-1832 opened Greene County to White settlement. By this time, the economic pattern of local and long distance trade to the area had been established. The regional center for the trade lay in the James River Valley, but the network encompassed the upper White River country to the south.

Those who came to Greene County sought legal and orderly property ownership and improvement rather than casual squattling and claiming. They included many families of means and entrepreneurial spirit oriented towards progress, property and capital accumulation. This orientation was reflected in the rapid establishment of the requisite social institutions for permanent settlement. Greene County was organized in 1833. In the following year, post offices and postal service was established between Springfield and Carrollton, Arkansas. The federal land office opened in Springfield in 1835.

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The orientation came into play in selecting the site of the first town and county seat, Springfield, which was located on the Kickapoo prairie near the intersection of the Boonville and White River traces.⁸ As Flanders and Morrow observed,

"The matter of these trade routes is perhaps the single moet important element in the location and early development, and of the subsequent history of Springfield as the central place for Greene County and finally for a large trade region. Springfield was a connecting point between the Missouri and White Rivers, and its own immediate hinterland was richly endowed with resources for a commercial agriculture."

In the ensuing decades, 1930-1860, Springfield and Greene County assumed multiple economic roles. Greene County and Springfield formed an industrial center with smithys, sawmills, gristmills, and tanneries to which were added, eomewhat later, tobacco processing, dairying, wagon making, and other more specialized enterprises. Springfield became a marketplace for and concumer of their products and the raw materials associated with them. 10

"Springfield was also the distribution center for all manner of imported goods coming from Boonville on the Missouri River and from Ste. Genevieve and St. Louis on the Mississippi. The city was also a consumer as well as processor and exporter of iron, that prized commodity of the great Maramec Mine and Iron Works some 150 miles to the northeast. Joined logs, boards, shingles, hides, furs, flour, meat, shot, hardware, meal, and livestock were traded in ever-enlarging commerce in and through Springfield and Green County."11

During this period, the Arkansas trade developed. Those living in the upper White River country had two available options for improving their standard of living. One was the production of trade goods, such as cotton, furs, hides, beeswax, and honey, which were exported north to Springfield or taken to the White River towns of Forsyth, Missouri, or Jacksonport, Arkansas, for shipment downstream to southern markets. Production of livestock was the other. Traders from Greene County purchased half-wide cattle from Arkansas and brought them north to be bred and fattened. They were then driven to Independence, Miseouri, or Leavenworth, Kansas, to be sold. 14

Traffic from Green County southward prompted construction of bridges on the major thoroughfares. As early As 1837, the Greene County Court appropriated \$100 for construction of two bridges on the road to

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Delaware Town and Fayette, Arkansas. A "substantial, wooden" bridge was built across the James River in 1849 on the road from Springfield south to Ozark in Christian County. Maintenance of this bridge was a primary concern as indicated by appropriations for its repair of \$12.50 in 1864, \$500 in 1866, and \$88.94 in 1868.

Although the Civil War disrupted life in southwestern Missouri, the succeeding period from 1870 to 1900 was one of growth and prosperity, particularly for Springfield and Greene County. Led by the business community of Springfield, residents of Greene County actively sought to sustain and enlarge their position as regional economic center. They were aided in their efforts by the extension of rail service from St. Louis to Springfield in 1871, and subsequent construction of lines to Kansas City and Memphis, Tennessee, by 1885. Several branch lines were built, including one to the Christian County communities of Ozark and Chadwick between 1882-1883. Thus, by the mid-1880s, Springfield was joined to national markets and had become the regional rail centsr. 20

Significantly, rail service to the upper White River country was not established until later. The railroad from Springfield to Harrison was not completed until 1904.²¹

The Arkansas trade resumed after the Civil War. In the early 1880s, it amounted to over a million dollars of business annually for Springfield and Greene County. Hides, furs, and pelts still figured in the trade as well as cotton. The number of bales of cotton shipped to Springfield was increasing. In 1880, Springfield received 9,000 bales. Although much was exported, cotton was used locally by the newly established Springfield Cotton Mills. Merchandise also figured in the trade. Wholesale and retail merchants in Springfield supplied the leading towns, crossroads, and places of business in northwestsrn Arkansas with a variety of goods. 25

With the extension of rail service to Springfield, Ozark, and Chadwick, commerce in the upper White River country was increasingly directed northward. The steamboat traffic on the White River was replaced by freighting services which hauled wagon loads of goods overland along several routes. 26 These were the Yellville, Arkansas-Chadwick road, the Leadhill, Arkansas-Springfield road, the Wilderness Road from the Berryville-Green Forest-Huntsville area in Arkansas to the Springfield-Ozark area in Missouri, and the Harrison-Springfield road. 27 These roads and the traffic they carried were key components in Springfield's late 19th century growth.

Consequently, efforts began in 1880 to complete and improve the Harrison-Springfield road. These were initiated during a series of

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public meetings held in Springfield.²⁸ It was pointed out that agricultural interests had encroached on the roadway.²⁹ The need to have a smooth road with bridges and a macadamized surface was stressed, suggesting that the road was badly eroded and only fords existed at stream crossings.³⁰ The meetings resulted in the formation of the Springfield and Harrison Road Public Road Company.³¹

The following report, prepared by the Committee on Roads South during the meetings, summarizes their views and lists the company members:

"Whereas, we, the citizens of Springfield and Greene County, in mass meeting assembled, regard good public roads as indispensable to our comfort, commerce, and prosperity, and that such a road from Springfield to Harrison, in the state of Arkansas, is of the utmost importance in this city and county as well as the town of Harrison and vicinity and other counties along the line of said road; therefore, rssolved, we do organize a comp; any to be called the Springfield and Harrison Road Public Road Company, and that the following named persons constitute the members of the organization from Greene County, to wit: C. H. Heer Sr., John Schmook, J. T. Keet, J. C. Cravens, J. M. Doling, B. U. Massey, H. F. Fellows, J. S. Waddill, Frank Massey, B. J. Newsom, G. D. Milligan, H. F. Denton, John Combs, Col. J. B. Thomas, L. A. D. Crenshaw, L. H. Murray, H. E. Howell, J. McAdoo, W. A. Hall, A. R. Fearn, John McGregor, W. D. Hubbard, Chas. Sheppard, G. M. Jones, C. B. Holland, W. F. Geiger, W. F. Mansfield, James Abbott, M. Echelberry, Dr. T. U. Flanner, D. H. Nichols, H. W. Diggins, W. M. A. Townsend . . . "32

Those involved in the company had a vested interest in the Arkansas trade. Their numbers included a variety of merchants and manufacturers as well as bankers and lawysrs. 33 Five notable examples were J. M. Dolling, company president, who headed a major grain and merchandising firm in Springfield; Homer F. Fellows, company secretary, who in 1870 organized the Springfield Wagon Company, destined to become the nation's leading manufacturer of wagons by the turn of the century; Charles Sheppard, company treasurer, owned stores in Springfield and Ash Grove. L.A.D. Crenshaw owned a 1,200-acre farm along the Springfield-Harrison road in Greene County and specialized in raisin draft animals. L. H. Murray was involved as a drover and trader in the antebellum Arkansas trade and engaged in merchandizing and stock raising in the latter part of the century. 34 Many company members were active in civic affairs 55, particularly in projects that would

enhance Springfield's commercial position, such as railroads, or bring modernity, such as waterworks, streetcars. Their business connections extended beyond the city and county and would prove useful in the road project.

A contemporary Greene County historian observed in 1883, "that the project was designed to facilitate communication with our 'rackensack' neighbors and to draw their trade to Springfield. It engaged the attention of merchants and businessmen for some time."³⁶ The extent to which they were successful in improving the Harrison-Springfield road is not documented. However, it is likely that their efforts influenced the Greene County Court; for the earliest iron bridges erected by the county were on the southern freight routes. The first in 1885 was the James River Bridge on the Harrison-Springfield road.³⁷ This was followed by additional bridges across the James River on the road to Ozark (1886-1887) and at Gates Station (1887) in Section 29, Township 28 North, Range 21 West.³⁸

B. Construction Chronology

In response to a petition for a bridge over the James River on the "Dutch store and Harrison road," the Greene County Court ordered the road commissioner on July 25, 1884, to view the points of crossing and then report on the dimensions of the bridge and approaches on the first Monday in September. 39

However, no further planning was done until the spring of 1885. On March 3, 1885, the road commissioner, J. Youngblood, reported to the court and filed plans and specifications for the bridge. These were accepted, and the road commissioner was ordered to advertise for bids for construction of an iron or combination bridge. The bridge was to be paid for out of a special fund, levied and created for the purpose of its construction. 40 On March 13, the court ordered that specifications for the "stone work" be changed from Portland cement to Fort Scott cement. 41

The contracts for the work were awarded on April 13, 1885, to the lowest bidders. The masonry and stone work was awarded to J. B. Lynch of Pleasanton, Kansas, at a proposed cost of \$5.425 per cubic yard, while the contract for construction of the superstructure was awarded to Mr. George H. Wheelock, president of the Kansas City Bridge and Iron Company. The superstructure, a 100-foot single span of iron, would cost \$2,100. The stone work was to be completed by September 1, 1885, and the superstructure by October 1.42

During the May 4, 1885, session of the court, the road commissioner was ordered to secure the right-of-way for the approaches to the proposed bridge. 43 At that time, J. B. Lynch presented his three bonds to the

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court with himself as principal and B. P. Brunner, W. G. Evans, D. W. Brown, J. S. McLowen, W. J. Lansdown, and S. S. Standesh as his securities in lieu of the \$1,800.44 The bond was posted and approved by the court. The Kansas City Bridge and Iron Company, represented by George H. Wheelock, principal; Albert M. Blodgett and William H. Chapman, securities, posted a bond of \$4,200 on July 7, 1885, which was approved by the court.45

Work on the abutments began in the summer and continued through September 1885, as indicated by the following warrants drawn on the bridge fund for payment to J. B. Lynch: \$100 on July 7, 1885; \$200 on July 27, 1885; \$500 on August 24, 1885; \$200 on September 8, 1885; and \$715.40 on September 17, 1885.46 The superstructure was in place by October 6, 1885, at which time the court viewed the bridge and accepted it. The court ordered that warrants of \$1,775 on the bridge fund and \$325 on the road and canal fund be drawn in favor of A. F. Ingram, county treasurer, for the purpose of paying the Kansas City Bridge and Iron Company.47 The Springfield Express described the bridge as "...one of th best structures in the southwest and will be of much advantage to people coming to the city from Christian County."48

It is likely that the bridge was maintained after its construction. However, court records are not clear as to when such work was done or what it entailed.

C. Location

Court records and contemporary newspaper accounts ⁴⁹ associated the James River Bridge with the Harrison road and Dutch store. The road from Harrison, Arkansas, to Springfield was developed between 1870-1885, although segments of it were in use prior to 1860. From Harrison, it went north through the communities of Omaha and Kirbyville, Missouri, then to a ferry across the White River. From there, it went to Pedrow, then to Reno (initially a campground, later an 1880s resort), then north to Spokane in Christian County. Here, it joined the Wilderness Road. From Spokane, the road went due north through Highlandville (location of the Dutch store) and Nixa in Christian County, across the James River, and terminated in Springfield.⁵⁰

In Christian and Greene counties, the alignment of the Harrison-Springfield road, or Wilderness road, approximates that of present-day Campbell Street in Springfield and Missouri State Route 160 to the south. This north-south route through Wilson Township in Greene County lay about a mile east of the Delaware trail to settlements in the James River Valley and appears in an 1876 Historical Atlas and on an 1884 U.S.G.S. topographic map. ⁵¹ It extended from the city limit of Springfield, south to the Christian County line, crossing the James

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River in Section 25, Township 28 North, Range 22 West, some 1.6 miles east of the James River Bridge. Neither the James River Bridge nor the access roads leading to it appear on either map.⁵²

While it is possible that there were several fords across the James River for the Harrison-Springfield road, it is likely that economic and engineering factors entered into the selection of the bridge site. Court records indicate that no earthern approaches or additional spans were required in its construction and that the channel was crossed by a relatively short truss. 53 In effect, the lowered cost and relative ease of construction at this point probably influenced selection of the site, even though it required taking a detour off the main route of travel.

The communities along Missouri State Route 160 in Christian County initially developed as stopovers for teamster traffic in and out of the southern hinterlands. Nixa, some seven miles south of Springfield, developed around a store that opened in 1870 to serve overland freighters. 54

Another service center was the Dutch store. Established in 1868 by Frank Kentling, a German emigrant, the store was deliberately situated one day's journey south of Springfield (ca. 15 miles), so as to provide a convenient stopping place for overnight trips or longer travel between Springfield and north Arkansas. The store developed a local trade as well, buying game, eggs, poultry and native herbs, then shipping them to Springfield merchants. The Kentling, or Dutch, store marked the beginning of the present community of Highlandville. 55

III. THE BRIDGE

A. Description

The James River Bridge is a single span Pratt high through truss. The six-panel pin-connected structure has diagonal members in tension and vertical members in compression, except for the hip vertical eyebars in tension adjacent to the inclined end posts. The bridge is 100.2 feet long, 13.2 feet wide (curb to curb), and 18.0 feet high (vertical clearance over deck). Metal rods and eyebars are used for the vertical and diagonal tension members. Rods are used for the top and bottom The vertical compression members at the panel lateral X-bracing. The top chords and inclined end posts points are laced steel channels. have a steel channel, 7 inches tall on each side, with a continuous stsel plate, 12 inches wide by 1/4 inch thick, rivetsd to the top, and plats straps, 12-inches long by 3-1/2-inches wide by 1/4-inch thick, riveted to the bottom at 48 inches on centers. The steel channels, used for the top chords, inclined end posts and vertical compression members,

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have the word "CARNEGIE' stamped periodically along the web. The bridge portals are laced with a pair of continuous steel angles along the top and bottom. The horizontal cross members between the three interior top chord panel points are all a single steel angle. The bottom chords are a pair of eyebars, 2-1/2 inches wide by 1/2-inch thick, pinned to the verticals. The bridge has no metal ornamentation. The name plate at each of the portals reads as follows:

KANSAS CITY BRIDGE & IRON CO 1885

The transverse floor beams occur at the five interior bottom chord panel points and are bolted to the bottom chord pins with U-bolts. transverse floor beams are built-up plate girders, consisting of a pair of continuous steel angles along the top and bottom riveted to the 18-inch tall web plate. The floor longitudinal stringer beams are rolled steel I-beams, 6 inches tall, spaced at 24 inches on center. The longitudinal stringers along each side of the deck are steel channels, 6 inches tall. All longitudinal floor stringers are bolted to the top flange of the transverse floor beams. The bridge deck is made of rough sawn, timber planks, approximately 3 inches thick and 12 inches wide. They are laid from curb to curb on their broader sides. The deck planks are nailed to wood stringers, 3 inches thick by 6 inches wide, which are bolted to the sides of the floor's longitudinal steel stringer beams. The continuous side curbs are wooden members, 4 inches square, that are periodically bolted to the deck planks. guard rails along the bridge length are continuous 3-inch by 3-inch by 1/4-inch steel angles at 1.8 feet and 3 feet above the deck.

The truss is set upon cast-in-place concrete abutments. At each of the bridge corners, the upper and lower chords meet at a pin connection. Each bearing pin is supported by a bearing plate assembly, which is bolted to the top of the abutments.

B. Modifications

Court records indicate that bridge maintenance and repair periodically took place. However, given the number of bridges across the James River and the frequent failure to indicate upon which structure work was done, it was not possible to determine the dates or types of repairs made on the James River Bridge after its construction.

The metal truss appears to be essentially unaltered. It has been repainted and, periodically, the wooden deck has been replaced. The abutments, however, may have been originally constructed using rough cut limestone, then replaced at a later date with cast-in-place

concrete. Remnants of rough cut limestone wingwalls can still be seen behind and extending beyond the concrete wingwalls.

C. Ownership and Future

The James River Bridge has been owned and maintained by Greene County since 1885. The Greene County Highway Department has designated this as bridge No. 2334. The Missouri Highway and Transportation Department has adopted this number in their county bridge inventory. It is on Greene County Farm Road 141, 0.6 miles north of the Greene/Christian County line and 1.5 miles west of Missouri State Route 160.

A structural appraisal of the bridge revealed that it is structurally insufficient and functionally obsolete to carry modern vehicular traffic. The width of 13 feet provides only one driving lane, and the posted 4 ton legal load limits the traffic to cars and light trucks. It has suffered collision damage, with some of the vertical compression members bent as a result. Most of the metal components show signs of rusting, pitting and general deterioration. The concrete abutments are cracking and spalling, and the wooden members are deteriorating. lower half of the truss is periodically submerged by high water, as the deck elevation is 8.5 feet below the 10-year frequency flood stage and 9.6 feet below the 25-year flood stage of the James River. Because of its condition and the inadequate level of service it provides, a decision was made to replace the bridge. Although the alignment of the proposed replacement structure misses the James River Bridge, the north abutment is impacted by the proposed fill slopes. Because of this adverse impact, and the possible total loss of the bridge due to future flood damage, a decision was made to remove the bridge

The availability of the James River Bridge will be advertised prior to removal of the structure. Should a party agree to take possession of the bridge, they will be required to transport it to another location and reconstruct it for a use in a capacity compatible with its historic nature. Greene County will matchmark, disassemble and prepare the truss for transport. If a responsible party cannot be found to take possession of the James River Bridge, it will be demolished at the initiation of construction of the proposed replacement structure, tentatively scheduled for summer 1989.

IV. BIOGRAPHICAL MATERIAL

A. The Kansas City Bridge and Iron Company

The Kansas City Bridge and Iron Company was headquartered in Kansas City, Missouri. Apparently a regional concern, it was in operation between 1880 and 1893. Its corporate officers were George H. Wheelock,

president; E. I. Farnsworth, chief engineer; and A. M. Blodgett, vice president. The company built one bridge in Greene County, the James River Bridge on the Harrison-Springfield road. 57

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